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**COMMENTS, ARGUMENTS, & QUESTIONS ON GLACIER NORTHWEST'S
APPLICATION FOR: TRANSFER OF PERMIT, EXPANSION OF THE MINING
PLAN, OPERATIONS, AND A REVISED RECLAMATION PLAN.**

To Whom It May Concern:

The following comments are in regards to the Draft Environmental Impact Statement for the Mats Mats Quarry. They are made on behalf of the Mats Mats Area Coalition. The following comments are presented in no order of importance, but are referenced with page numbers for ease of reference.

If you have any questions, please feel free to contact me at (360) 437-9442.

Yours truly,



Rae Belkin

Mats Mats Area Coalition Coordinator

INTRODUCTORY REMARKS

I have re-read the original 1997 Hydrogeologic Report, the original November, 1999 Application, countless reference materials, and the 2002 Draft Environmental Impact Statement. After another reading of the SEPA regulations, I fully believe permission for mining to -60 feet MLLW, or its alternative of -30 feet MLLW, should not be granted. A different reclamation plan should be devised, and the best choice of all the alternatives is the *No Action Alternative*.

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I remind you that your department has adopted the policies set forth in the State Environmental Policy Act. "Mitigation measures shall be reasonable and capable of being accomplished. In order to deny a proposal under this chapter (RCW 43.21C.060), an agency must find that: (1) The proposal would result in significant adverse impacts identified in a final or supplemental environmental impact statement prepared under this chapter; and (2) reasonable mitigation measures are insufficient to mitigate the identified impact.

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Without listing all the problems associated with this proposal (which are in the body of the following submitted text), and concentrating only on the mitigated ones, the following mitigations for the Mats Mats Quarry's expansion proposal are in question.

- Their own consultants recommend the wall between the retention ponds (which is a major part of their storm water drainage system) not be removed before mining. The ponds are then removed when phases 3 and 4 are mined. There is no back up plan to cover the diversion of storm water after their removal. The other systems of check dams are removed in mining phases 4 and 6. There is no plan to replace them. Will this mitigation to attempt to divert millions of gallons of storm water deny aquifer recharge to surrounding off-site wells? To what location is the water diverted?

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- Along with the errors mentioned above, much is made about the sedimentation pond adjacent to the quarry jetty. There is no evidence of any such pond existing until the final stages of their reclamation plan. Where is all the water and sediment going for the 20 years in the mid-part of the mining plan?

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- There is much testimony given by their experts about siltation and fugitive dust. Information should also have been included about the tidal flows around this site. On Emission Table A-1, the tale is told. The numbers are derived after figuring in use of spray nozzles, and reductions after watering in 2 instances (blasting/drilling and the grizzly plant). These numbers indicate the amount of fugitive dust in the air. It has to land somewhere. It lands on the quarry site, and the waters and properties surrounding the site. When it lands on the water the tidal action carries a lot of it into Mats Mats Bay. Mining and reclamation together will cause an increase in dust- only some of it is controlled by the measures they have discussed.

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- On the Final Site Contours Plan Map (Fig. 2-4), is a mitigation that uses science to produce a final result that seems doomed to failure. While it is true that freshwater holds back seawater, the big question is will it work in this scenario? Has it ever worked in a plan like this? Should the Mats Mats Quarry be a guinea pig? The "freshwater lens" is needed to hold back the expected seawater intrusion. It is dependent on 30 inches of rainfall a year. According to the USGS, Port Ludlow only receives between 23-27 inches of rainfall a year. The other problem is that 9 million tons of rock substance will have been removed and replaced with fill. Unlike rock, fill absorbs water. Why won't this ability to absorb and disperse water drain the "lens"? Lastly, as the water runs off the cliffs surrounding the reclaimed area, won't erosion happen? How will the "lens" stay intact? There are no answers to these questions in the presented mitigation. What makes Glacier think it will only

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leak in that one spot? There is no evidence to show it won't leak when -13 feet MLLW is reached in other mining phases that are near the shoreline. Lastly, how long do they estimate it will take the fresh water to overtake the salt water?

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- The DEIS states, "Atmospheric dust deposition is not the same as runoff deposition which contains very fine sediments. The study area has moderate to steep slopes resulting in an increased risk of sediment delivery." There is no mitigation for this. Their drainage swales do not occur until the final stages of reclamation. What happens during the ensuing mid-years of the proposal. There also is no attempt to mitigate the runoff on the outside slopes of the high walls. Their own experts stated this needed to be done to minimize continuing landslides on the beachside of this wall.

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- There is much space given to mitigating the effects generated from blasting. However, there is no information given about vibration and how it travels through fill or faults. While most of the time Glacier Northwest's DEIS tries to paint a picture of no faults, they fully admit in the Highwall Stability Review that faults, fractures and bedding planes exist. There is also no vibration analysis on the northwest quadrant of the site. They do not know how vibration will affect those residences, as they haven't mined there yet.

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- Is the true reclamation of a site determined by what is planted during the final stages of reclamation? The mitigation here includes hydroseeding, pioneer species (weeds), and alders. Does this community really need planting that "in 15 - 20 years would have less wildlife due to their simple structural and floristic composition, including a poorly developed forb/shrub layer"? There is no watering plan for this poor substitution, either.

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- How can mitigations even be developed for a site that Glacier says is the noisiest thing in the community? Their noise study was done at sites of their choosing and with only certain machinery running. How can true mitigations be developed from this scenario? Mitigations should have been developed from a study done when all the noise factors were in operation plus the additional factors from reclamation put into the equation also.
- Their traffic and road mitigation was fairly non-existent. To get a better picture of the impacts, you must ask yourself, how big was a truck in 1935? The defined road has not changed, while more people have moved into the area. Now, the trucks have become massive, tandem in some cases, and the volume has increased along Olympus and Quarry roads. As the trucks have increased in size, the turning radius at the intersection of Oak Bay Road and Olympus Boulevard has not changed- it has gotten a bit steeper, though. There was no mitigation for this as it probably would be too costly to accomplish.
- The Groundwater Monitoring Program that was included in the DEIS was a mitigation that needs many changes to work. As it is written, it puts the burden of proof on the resident and can only end with the resident suing Glacier for redress. It may also be null and void as it contains the language that made it effective only if "Jefferson County issues a determination of non-significance or a mitigated determination of non-significance." As Washington State's Department of Natural Resources is the Lead Agency, and a determination that there were significant environmental problems with this proposal was made, this language needs to be omitted from this mitigation. Also, any language that forces the Mats Mats Area Coalition to hire consultants needs to be removed, as the membership changes and not all members of the community are members of the coalition.

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- Towards the end of the DEIS, this statement occurs: "The mitigation measure (s) chosen would be dependent on site-specific conditions, such as bedding, fault and/or joint pattern orientation, and would be determined during mining, as necessary." Who is doing the checking? What happens if, during mining, a proposed mitigation doesn't work and an adverse impact, such as an aquifer break or a failure in the created highwall, occurs? At this point, it is too late and Glacier is still off the hook because the one consistent statement they have made is: "No adverse impacts are anticipated."
- Will the mitigations, in concert with the planned reclamation, satisfy Jefferson County's developmental requirements? As one must reclaim for subsequent use, does the information in the Draft Environmental Impact Statement satisfy this requirement?

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I would hope you would read all of the coalition's analysis which follows. The problems with the overall plan can lead you to only one conclusion- the choice of the *No Action Alternative*. There is too much at stake here. This not the only rock quarry in Jefferson County. However, it is the only one in our community. We know its problems all too well. We have lived with them for 68 years. It is time to let the old permit come to an end, and a new one not be granted.

**[Please Note: THE ARGUMENTS, QUESTIONS & COMMENTS
PRESENTED ARE IN NO PARTICULAR ORDER]**

• **Mats Mats Area Coalition's continuing objection to the expansion project.**

Glacier Northwest has identified on page 3.7-4 our major objection. In their own words, "Continuation of the existing mining operation would affect several different elements of the environment, including air quality, noise and traffic that could affect land uses in the vicinity of the site." The land uses in the vicinity of the site have been established as residential. This project would greatly interfere with the enjoyment of our properties since the majority of residents expected the mining to be ending sometime between 2002 and 2005. This was fully established during testimony regarding the proposal to build a graving dock on this site in 1991.

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• **Loophole factor.**

When discussing any significant impact Glacier Northwest loophole-answer is, "No significant impacts are anticipated." (I am sure Cadman did not anticipate the draining of the aquifer of the community around their Monroe mine.)

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• **There will be no increase in mining or blasting rate.** (November, 1999, Application and Proposal and pages ii, 2-5, 2-6 and 2-8 of the DEIS.)

How can this be true when Glacier Northwest proposes to mine 58 acres to -60 MLLW in 30 years (including total reclamation) and it took 67 years to mine from approximately +100 to 0 (-13 in one small spot only)?

Page 2-6 states, "Blasting averages 1-2 blasts per week with a maximum of 3 blasts per week." Page 2-8 states, "As under current operations, the number of blasts would average approximately 3 per week." This seems to be an increase in the blasting rate, which would have to occur in order to complete their mining by 2025!

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• **Growth Management Act (GMA)- "This is a permitted use."**

On page 2-5 it says, "As under current practices operations would provide rock products for the regional market (Puget Sound Region, British Columbia, and Alaska) and the local market (Jefferson, Clallam and Kitsap Counties)." I believe that under

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GMA the term "mineral lands of long term significance" was to apply to a county not a region that extends to Alaska.

Is this rock used for "roadway" (p. 2-5) or driveway use?

What does a Mineral Resource Area designation really mean? [See Exhibit #1.]

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- **Mining and reclamation will occur at the same time after the mining of Phase 1 is completed.** (p. 2-9)

Page 3.4-21 states, "Reclamation will begin once mining of the site has been completed."

Page 3.5-11 states, "Mining would continue until approximately 2007, whereupon reclamation of the area would begin and be completed in approximately 2010." I understood that under the *No Action Alternative*, mining would end in 2005 and reclamation would end in 2007.

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- **Clean Soil Problems and comments about the fill to be used.**

"If sufficient quantities of imported clean soils were not available from other sources, soils would be barged to the site from existing Glacier Northwest mining operations." (p. 2-9) Due to the arsenic and heavy metal contamination (from the AASARCO plant in Tacoma) of the soils from some of Glacier Northwest's other sites it does not seem to be a good idea to bring any of these soils to the Mats Mats area where there is problem with fugitive dust.

Are dredged spoils allowed to be used?

Page 7 of the Hydrogeologic Evaluation, Appendix I, says, "this material [referring to Vashon lodgement till] may be used as reclamation backfill when the lodgement till does not exceed its optimum moisture content." Does this mean that there is water in the lodgement till? Since this is at the north end of the quarry, could be an indicator of freshwater?

Page 18 of Appendix I states, "Imported soils will be placed during the reclamation phase and will ultimately cover the bedrock faces created during mining." Since the fill is scheduled to only rise to an elevation of +30 feet and the top of the high wall is approximately +100 feet, how can the covering of the bedrock faces be accomplished?

Glacier Northwest does not accept clean soils out of the kindness of their heart. They do it as part of their business plan. This is a fee-based side business for them. Does Glacier sell what they can and then use the non-saleable leftovers as fill? Will this importation of soil-for-a-fee trigger a permit here in Jefferson County? Who will supply the compliance officer? Does the fox get to guard the hen house?

Do the calculations support the stated amount of fill needed? [See Exhibit #2.]

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• **Conditional Use Permit? Shoreline Permit? Stormwater Discharge Permit?**

On page 2-6 it states, "With 4,000 ton barges, the maximum barge loading/unloading capacity of the site is 4 barges per day?" Unloading is a new activity (the most recent unloading activity was related to the repair project associated with the fixing of the barge loading facility and not reclamation). Will Glacier Northwest need a Conditional Use Permit (CUP) from Jefferson County as it will need use of the shoreline to accomplish this activity?

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Is the adding of reclamation to the Mats Mats Quarry site a change of land use?

"If increased off-site impacts would result from expansion, intensification, modification, a conditional use permit would be required." (p. 3.8-5) Will glacier be doing anything different? They are proposing to mine deeper, import fill material, and reclaim and compact all at the same time. This is a different use from mining to the limits of their current permit (+/- 1 foot sea level), reclaiming using the existing mountain of overburden, and only having outgoing barging! There will be an intensification of the use of the site and of the mining process by phasing the mining, increasing the noise, traffic (barge and truck), dust, sedimentation, and vibration.

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The quarry contends they will not have any new uses or development 200 feet from the Ordinary Highwater Mark (OHM). Isn't the new importation of material for reclamation filling a new use? After all, recently they had to get special permission from the County to fix the barging site, which required the importation of fill.

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Will this project allow the importation of sand and gravel for resale?

See some comments below regarding stormwater discharge.

See previous comments by Jefferson County regarding permits. [Exhibit #3.]

• **Phased Mining and Figure 2-3 (Mining Phasing Plan).**

They seem to be mining an area that is their current road in Phase 6. Will they have to construct a new road? If so, where will it be located? Will a new noise study be done to cover this?

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There is no indication, on the Phased Mining Map, of where the fill for Phases 4, 5, and 7 is coming from (there is no storage pile shown as a source). There are no arrows going to these phases.

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Page 20 of Appendix I says that they are recommending that the wall between the retention ponds not be removed before mining. Which phase of mining? Figure 2.3 shows it is to be removed when they get to Phases 3 and 4. The retention pond is in sections 3 and 4. In section 3, 98% of the big pond is removed. There is another pond in the west section of section 3. Three touches on the west high wall. This plan does not appear to work.

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In Appendix III, page 3, "Runoff from virtually the entire quarry would continue to be directed into the existing sediment ponds located on the west side by the Mats Mats Bay slip." Again, those ponds are scheduled to go in phases 3 and 4. If this is true,

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where will all the collected and diverted water go? Will this trigger a new NPDES Permit? A Stormwater Discharge Permit? [See exhibit #4- transparency overlays.]

- **Final Site Contours Map (Figure 2-4).**

Page 2-9 references "existing small infiltration areas located along the northern edge of the site would continue to provide infiltration of runoff from a relatively small area north of the reclaimed quarry." What "existing small infiltration areas"? Is approximately 800 feet small? Why won't the 200 foot setback from all of the shoreline need this infiltration area, sometimes referred to as a "freshwater lens" (page 3.3-13)?

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- **Transfer of Old Permit vs. New Permit.**

"Issues associated with resource extraction principally concerns modification of existing topography and related wall stability." (p. 3.1-4) The topography has already been modified. It seems that the new intensification (the vertical expansion of mining from the old permit's ending elevation of +/- 1 foot sea level to - 60 feet MLLW plus the associated reclamation to approximately +30 feet) would be reason enough for considering the process of issuing a new permit.

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Does a mining permit allow a company to mine to the depth of their own choosing? Permits come with their own set of restraints and controls. No where do DNR Permits imply a miner may "mine to depletion."

- **Groundwater and Seepage.**

Does there have to be "major faults or fold" (p. 3.1-1) for drainage to occur? The type of basalt present at the Mats Mats Quarry is filled with faults, fissures, and is susceptible to crumbling. [See Exhibit #5- Beach photos showing fractures with seepage.]

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On Page 3.1-1, it even states, "It is likely that there are many more individual flow areas beneath covered areas, but only flows clearly recognized in the quarry faces, out crops, or in drill cuttings, have been displayed on the geologic map (Appendix I, Plate 2).

On page 3.1-2, number 3, it states, "Brecciated character could also facilitate groundwater seepage". Number 4 states, "The shale "breaks" are typically friable, with poor rock quality and the potential for allowing groundwater seepage". While this report would have you believe there are no faults or folds, they conclude page 3.1-2 with this sentence, "During the uplift the individual flows and shale breaks were locally offset by a number of relatively small-scale faults that cut across the lava flows at relatively high angles."

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In these seepage zones, how is this groundwater charged?

With all this seepage, it is really imperative that the following statement from the original, January, 1997, Hydrogeologic Report for the Mats Mat Quarry (page 9) be reinstated as an essential mitigation- it is missing from the DEIS. "We, [AES, INC.], recommend that mining activity should not continue to the south in the vicinity of exploration borings EB -1, -3, -4, and -20. This will maintain the existing hydraulic barrier between the quarry and existing offsite wells to the south." This language should be added to the statement found on page 3.3-15, "The southerly limits of the mining area have been established to maintain the existing hydraulic barrier between the quarry and the off-site wells."

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On page 3.1-4 of the DEIS, it states, "Some groundwater movement can occur along the high angle faults. These zones are relatively narrow. It is anticipated that the groundwater would move in a north-south direction across the site." Will the expansion proposal cause the groundwater to drain out of these flow zones into the quarry? Will this drain the aquifers to the south?

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In contrast to this, on page 3.3-5 it says, "Little ground water movement is anticipated to flow in a north-south direction because any ground water movement in this direction would be required to flow through several relatively thick sequences of rather impermeable columnar basalt." However, in their description of this site (p. 2 of the original hydrogeologic report and p. 3.1-2 of the DEIS) four distinct layers are described (not just columnar basalt and sediment). Two of the four "facilitate ground water seepage"!

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"The amount of ground water and rate of ground water movement on the site is low." (p. 3.3-5) They do not say there is no ground water movement. It is only characterized as slow or low.

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If freshwater seepage was greater at the mine's current base after a rainfall, wouldn't this suggest that some absorption and filtering is taking place? It is not all run-off- it is referred to as seepage! (p. 3.3-8)

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The original Hydrogeologic Report (January, 1997; p. 6) states: "Based on proximity and location with respect to geologic delineations of lava flows, it is possible some of the water in the retention ponds is seeping back into the mine." Now this sentence reads, "Water in the retention ponds evaporates or is eventually discharged into vegetated sediment pond area prior to discharging into Mats Mats Bay." (p. 11 of Appendix I.)

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• What constitutes "temporary" impacts?

"The increased hydraulic gradient [marine water seepage] would be temporary, limited primarily to the mining phase of the project." (p. 3.1-4) The *Proposed Action* would last for approximately 25 years. The *Limited Mining Alternative* would last for approximately 15 years. The *No Action Alternative* would last for approximately 3 years. Is 25, 15, or even 3 years temporary? According to the Random House College Dictionary, the word temporary "implies an arrangement established with no thought of continuance but with the idea of being changed soon."

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More use of the word "temporary" can be found on page 3.2-9, where it states, "The site currently utilizes the following mitigation measures that are detailed in their OAPCA Order of Approval to Operate at Temporary Locations Permit." There is nothing temporary about 30 years!

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• **Dust Generation and Fugitive Dust Impacts.**

"The Proposed Action would continue to generate dust and particulate matter from emission sources like the loading operation and unpaved roads." "Quarry reclamation with soil would generate additional fugitive dust as a result of the soil movement." (p. 3.2-3) On page 3.2-10, the information continues on how certain precautions can be taken to prevent fugitive dust from becoming airborne. "They include, but are not limited to:

- the use of control equipment, enclosures, and wet (or chemical) suppression techniques, as practical, and curtailment during high winds;
- surfacing roadways and parking areas with asphalt, concrete, or gravel;
- treating temporary, low traffic areas with water or chemical stabilizers, reducing vehicle speeds, constructing pavement or rip rap aprons, and cleaning vehicle undercarriages before they exit to prevent the track-out of mud or dirt onto paved public roadways; or
- covering or wetting truck loads or allowing adequate freeboard to prevent the escape of dust bearing materials."

Since "the Proposed Action is subject to local and federal air pollution regulations", (p. 3.2-10), why doesn't Glacier implement precautions 1, 2, and 4 from the above list? How will Glacier mitigate the fugitive dust that flies up into the trees? This is then dispersed with the wind.

A good mitigation might the employment of the dust collector shown in the picture on page 20, "Back to Basics; Nov/Dec, 1996" article on flyrock. This is found in Appendix XI.

Table A-1 of Appendix XII is quite an eye-opener. [See Exhibit #6.] It seems most of the dust is produced by dozers, the secondary grizzly plant, and the unpaved roads. These are the areas they need to work no matter which alternative is chosen.

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• **More consequences of fractures in the bedrock and boring EB -33.**

On page 3.3-1, it is stated that the "bedrock at the mine has few fractures. This is considered an effective aquitard separating the mine from groundwater aquifers." However, when EB -33 was drilled at the end of Olympus Boulevard, "Three distinct fracture zones, determined by downhole geophysical techniques, were identified within the boring. Fracture zones were separated by zones of solid rock, which in

places contained isolated, widely spaced fractures." One needs to remember that the mine site was once approximately 100 feet above sea level. Glacier Northwest is not mining in a vacuum. Bore hole site EB -33 was once part of the original elevation, even mined under a lease agreement with a previous owner, and remained in private ownership until purchased by Glacier Northwest in 1999. It represents what was. After 67 years, the quarry site represents what is. Will unconfined bedrock fractures, exposed by mining to -60 MLLW, cause seepage of the groundwater contained in the aquifers to the south of the site? (See previous comments under groundwater seepage.)

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Besides wells EB -12 and -13, the new well, EB -33, is listed as an exception to the statement, "There is no hydraulic connection between the on-site borings." This is direct opposition to the statement found on page 3.3-13, "The absence of a pathway for seawater seepage is demonstrated by the lack of hydraulic continuity between the mine and the off-site wells." Which is it? (p. 8 of Appendix I.)

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It is interesting that EB -33 is 550 feet west of Admiralty Inlet, while EB -12 and -23 are about 150 feet east and west of marine water. Could the 5 acres on which EB -33 is located be acting as a plug and saltwater intrusion "guardian" for the off-site wells to the south?

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Would a dry well (EB -33) have provided better evidence of the existence of a barrier between the properties to the south and the proposed expansion?

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Was the water in the well ever checked for quality? Chloride levels? Nitrates?

• **Dewatering, surface runoff, and the current NPDES Permit**

When rain falls on the site (millions of gallons over the proposed years), does it recharge the site?

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Will this increase in diverted water, due to the proposed expansion, be a cause of action for a new NPDES Permit?

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On page 3.3-3, there is a discussion of the ponds and why they are needed. "Until temporary surface water ponds are removed the bedrock wall between the ponds and between EB -10 and EB -25 will be maintained." (p.3.3-14) Problem: When they do their sequential mining, they are going to be mining the pond area (in Phases 2, 3, 4, and 5) and their berms. How does this affect the storm water NPDES Permit as these ponds are a part of that permit?

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Also on page 3.3-3, it states, that "storm water runoff from northern and eastern portions of the site is conveyed to a vegetative area via a rock-lined trench, or a French drain, before it is discharged to Mats Mats Bay". How will this work if they are working at -60 feet MLLW. Will this add to the amount of water discharged to the Bay? Can the problems associated with increased depth live together with the current NPDES Permit?

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"During the reclamation phase (which one?) stormwater runoff will be conveyed via 2 drainage swales to a sedimentation pond located adjacent to the existing docks on the eastern side of the quarry." (p. 3.3-11) The problem is that this pond does not appear until the end of mining-2025. (See Figure 2-4: Final Site Contours Map.)

Since there is no temperature data, it would seem that it should be monitored for a project of this size. "According to the Department of Ecology, discharge occurring during the summer months requires monitoring because of increases in discharge temperature from the stormwater treatment ponds are more likely to affect the aquatic environment." (p. 3.3-11)

Who will maintain discharge pipe and the rip rap dissipator?

How will Glacier mitigate surface water runoff onto the beach as per their consultant's recommendation on page 17 of Appendix I? (This to control landslide activity.)

"During reclamation, stormwater runoff will be directed to a sediment pond to be located on the eastern side of the quarry adjacent to the docks." (p. 2, Appendix III.)

If there is such a pond, it is gone during Phases 6 and 7. It actually doesn't seem to exist until the final phase is reclaimed. Please see Figure 3.3-1 (Stormwater Drainage and Outfall Location Map). Where is all the stormwater going until then?

"Landslide activity will continue to occur unless the impacts from wave action and surface water runoff are mitigated." (p. 17, Appendix I) No mitigation for this problem.

As noted below, the silt containment screen was reported damaged in the September 4, 2001, AES, Inc. report labeled as Appendix I. (p. 13, bottom) This is part of their erosion and dewatering plan!

• **Turbidity, Sediments and other conditions in the Bay (siltation).**

It is admitted that turbidity could be a problem in Mats Mats Bay if sediment release is not controlled. Very fine sediments "which elevate turbidity for a sustained period can directly affect fish behavior and physiology or indirectly decrease food supply habitat availability or the ability of fish to find prey. Turbidity could also exacerbate existing problems such as poor DO [dissolved oxygen]."

According to page 3.3-10, "Atmospheric dust deposition is not the same as runoff deposition which contains very fine sediments. The study area has moderate to steep slopes resulting in an increased risk of sediment delivery."

It should be a requirement that nitrate/nitrogen testing be conducted more often than "2 times in 5 years". (p. 3.3-10) They admit this is not enough frequency of testing to accurately estimate adverse concentrations in the stormwater runoff from the site over the life of the expansion proposal.

Will a permit be necessary for the dredging that is to occur every 5 years?

On page 3.4-21, it says, "...however, high nitrogen levels could lead to increased phytoplankton growth and a resultant decrease in dissolved oxygen and other water

quality parameters during periods when Mats Mats Bay was stratified or had low turn over rates. This could lower aquatic habitat quality of the bay."

Page 3.4-21 states, "Aerial-borne deposition would be the heaviest over the site and immediately east of the peninsula in Admiralty Sound...Higher amounts would fall in the narrow passage connecting Mats Mats Bay to the Sound." Problem: The tidal action brings this deposited dust into Mats Mats Bay. (see Figure 3.2-1, 3.2-2, and 3.2-3.)

"Prevailing wind patterns would limit depositions directly into the Bay." (p. 3.4-2) Problem: The wind actually exacerbates the dusty conditions by blowing the fugitive dust which has become deposited in the trees onto properties across the channel and onto the waters of the Bay. The incoming tide also takes this deposited dust and carries it into the Bay where seems to filter onto the tidelands. [See Exhibit #7.]

Summary of siltation problems:

- Silt catchment system (fence) at old loading dock in Mats Mats Bay is in disrepair. (p. 13 of Appendix I) No mitigation is scheduled. How do they clean this screen? Is there a maintenance schedule?
- Largest amount of dust concentrations (see Figures 3.2-1, 3.2-2, 3.2-3) land where tidal action carries it into Bay.
- There will be fugitive dust from the mining plus reclamation mixed with the prevailing southerly wind.
- There is some siltation from runoff.
- In Appendix XII, Tables A-1 to A-10 chart the expected emissions.

Are the sedimentation ponds ever dredged?

• Fish and Wildlife.

Page 3.3-10 states, "The eutrophication (loss of oxygen) risk in Mats Mats Bay would not change under the Proposed Action." Then they state, "However, areas with persistent stratification and restricted circulation, such as Mats Mats Bay, could be more sensitive to nutrient loading and, therefore, susceptible to eutrophication." Also, "Mats Mats could be sensitive to nitrogen inputs." Does this mean Mats Mats Bay will have less nutrients available? Will this decrease the food supply habitat availability? How does this affect the resident's shellfish beds? Migrating salmon?

"All waters surrounding the project area have been designated as critical habitat for chinook salmon." (p. 3.4-14) How does the outfall pipe on the Puget Sound side affect migrating salmon?

"Protection of the 200 foot shoreline setback would preserve perching and foraging potential for bald eagles, great blue herons, and osprey." (p. 3.4-19) Does this mean glacier will not be asking for any more Forestry Permits? A mitigation factor should be no more trees will be taken in the buffer and the replanting ordered by the County should take place.

"Animals that are at least tolerant of human disturbance would benefit from a cessation of mining activity." (p. 3.4-17, -18.)

How will migrating salmonids be impacted by release of sediments, turbidity, and the use of the discharge pipe into Puget Sound?

Has the run-off from the current mountain of overburden been taken into consideration?

Fish and Wildlife were concerned over the "major impacts from escaping mined materials into the water." [See Exhibit #8.]

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• **Marine Water Seepage (saltwater intrusion).**

The hydraulic conductivity for wells EB -12 and -23 is explained as follows in Northwest Aggregates Mats Mats Quarry Application For Transfer of Permit and Revision of Reclamation Plan- November, 1999. (p. III-8) "Hydrogeologic conditions at EB -12 and EB -23 are not representative of conditions within the quarry because of their close proximity to open marine water and the presence of nearby beach deposits (permeable unconsolidated sediments)." Furthermore, on page 3.3-7 of the DEIS, "Evidence of marine seepage through the north wall of the mine was also observed in the vicinity of EB -27." The problem: Since they have evidence of seawater intrusion at -10 feet (p. 3.3-7), and definitely at-13 feet MLLW (5 gpm), and because of the composition of the beach, what assurances does Glacier have that there will not be additional sites of seawater intrusion when they mine Phases 1, 2, 3, 5, and 7!

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If, "Seawater intrusion is considered to be an increasing problem in the Mats Mats area" (p. 3.3-9), then why exacerbate this problem by allowing mining to -60 feet MLLW and allowing intrusion to increase to 25 gpm. To remove 9 million tons of rock creates a giant boring that might as well be labeled EB -34!

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It seems obvious that rock is better protection against seawater intrusion than fill.

Will monitoring take place during the term limits of the project to measure the amount of seawater seepage? (A supplemental hydrogeologic evaluation is supposed to be prepared if during the course of mining is seepage greater than 50 gallons per minute occurs.) Who will monitor- the state or county? Can this occurrence be overturned?

74

• **Marine Water Seepage and the "freshwater lens".**

"In addition, both during and after the mine reclamation activities, groundwater recharge from precipitation will create a freshwater lens within the reclamation fill (placed in completed quarry areas) that will displace any limited amount of sea water that may enter the previously mined areas. The interpretation that a freshwater lens will eventually develop in the backfill soils is reasonable long-term. Annual precipitation is approximately 30-inches in the vicinity of the site (National Oceanic

and Atmospheric Administration, 2001). Assuming the backfill will generally consist of fine-grained soils, average recharge of approximately 10-inches would be expected based on precipitation-recharge relationships for western Washington as developed by the U. S. Geological Survey." (p. 3.3-13) The problems with this paragraph are listed below:

- Has this method of reclaiming to hold back marine water intrusion ever been accomplished before?
- What does long-term mean?
- Rainfall numbers from the USGS do not support 30" of rain falling on the quarry site every year. [See Exhibit #9.]
- The word assuming can be interpreted to mean that most of the fill might not be fine-grained soils.
- Won't the absorption nature of the fill overtake the lens formation? It seems that it is more likely a mucky mess will be established. What is to keep the "lens" in place?
- Since this is supposed to be a long-term process, at what point will the freshwater overtake the saltwater (after all, the saltwater will have a huge head start)?
- Will the residences that are supposed to come after final reclamation have to deal with saltwater intrusion? Will the County support this reclamation scheme as the miner is supposed to reclaim to support subsequent use?
- If this doesn't work, what will the consequences be? Will off-site well be affected in any way?

75

Is the "infiltration area" on the map, the same as the freshwater lens? Figure 4 (Appendix II, Plant & Wildlife Assessment) prepared by Selpeco (dated 10-98) does not match Figure 2-4 (Final Site Contours) prepared by HWA, Inc. The "infiltration areas" are not the same size or in the same place! The drainage swales are also different.

76

• **Vibration.**

Historically, blasting operations have been of great concern. [Please see the comments from Hartman Associates, Inc. in regards to the 1991 Graving Dock Proposal. Exhibit # 10.]

Will blasting/vibration calculations change when segments are mined and reclaimed? Example: When segment 5 is mined, will vibrations traveling to the north through the fill (the rock having been removed) be detected to a higher degree? Does vibration travel differently through unconsolidated material?

77

Are the faults talked about in relation to the stability of the high wall (see below) capable of transferring vibration to the residences to the north and west (across the channel) and to the south of the site?

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Page 17 of Appendix I indicates, "The blast consultant indicated that based on past monitoring in the landslide area, vibrations from blasting at the quarry are extremely

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slight. Blast vibrations are determined to be equivalent to the vibrations experienced from footsteps and blasting at the quarry was unlikely to accelerate the existing off-site landslide hazards." Would these be the footsteps of Godzilla!

"Blast monitoring is currently performed well inside the quarry limits between the blast and residences located to the west." (Appendix XI, p. 3.1) Monitoring needs to be conducted for the residents living to the north. Monitoring should really be done across the channel- especially when tons of rock are removed and replaced with fill.

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cont'd

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• **High wall issues.**

Will this wall be bench-mined?

Page 16 of Appendix I claims that potential block failures of the high wall will be controlled by discontinuity such as bedding planes, faults, joints, fracture planes in the rock mass." In previous sections of this DEIS one is lead to believe there no faults at all in their "competent rock". (Note: These faults and fracture planes are not mentioned anywhere else.)

How will the unconsolidated fill form a stabile high wall when they move from segment to segment?

Would the placement of "rock bolts" to stabilize the high wall cause an increase in noise, dust, and vibration?

There doesn't seem to be any evaluation of the west wall.

"The results of our study have determined that a factor of safety in the range of 1.6 is available to resist global failure of the pit highwall located adjacent to Admiralty Inlet. The highwall, however, would also extend along the entrance channel to Mats Mats Bay and will also border some of the bay. What is the safety factor for these sections?

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• **Replanting Assessment.**

On page 3.4-22 it states, "The reclamation plan would provide phased replanting of the site." Question- Is hydroseeding the same as replanting?

Are "pioneer species" the same as weeds?

Page 3.4-17 and -18 states, "The reclaimed areas would be quickly invaded by species found in the up slope shoreline buffer." Will this be noxious weeds like tansy ragwort, scotch broom, etc.?

Besides hydroseeding, what will the quarry plant?

Basically we can look forward to:

- colonizing community of saplings [alders], weedy shrubs, forbs (plants that are not grasslike), grasses;

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- fifteen to 20 years following planting, however, the early seral stages would become young, closed canopy mixed forests which would have less wildlife due to their simple structural and floristic composition, including a poorly developed forb/shrub layer;
- these plant communities would have much lower value for most species of wildlife;
- the communities of the side slopes would develop more slowly due to lower growing season soil moisture.

When does habitat become "naturalized to the area"? 40 years? 50 years?
There is no mention of how watering will be conducted during the drier months?

89

• **Noise Impacts.**

A mitigated condition of this proposal should be that when they go from section to section and have to move the processing equipment, a completely new noise study will be done. When the processing area is moved to the reclaimed area north of the existing plant area this will greatly affect those residences on Puget Sound and those north of the entrance channel. When the crushers are moved into the open, no one will benefit from current buffers.

90

Page 3.5-1 states "...a 70 dBA sound level will sound twice as loud as a 60 dBA sound level." "The degree of impact also depends on who is listening and the existing sound levels."

91

Will new elevations created from reclamation cause an increase in noise patterns?
Where will the 42" jaw actually be relocated?

92

We agree with the statement made on p. 3.5-5, "The quarry is the most significant noise source in the area and has been since it began operating in 1934."

On page 3.5-9 Glacier admit, "Grizzly was a significant source of noise."

Page 3.5-3 states, "Most of the hopper loading contributed to sound levels in the mid-50 to mid-60 decibel range." Aren't the sound levels limited to 60 dBA or less?

93

Because the processing plant is portable, and equipment locations are scheduled for change (due to the segmental mining), noise studies should be redone whenever the large equipment (big jaw, portable plant, grizzly plant) is moved. This should be included in the mitigations.

94

Will more equipment working at the same time (mining + reclamation) increase noise levels at the site? Yes. According to page 3.5-11, "Therefore, average sound levels attributable to the quarry would increase slightly due to the increased activity during reclamation even if maximum sound levels remain unchanged.

95

Will more barge loading and unloading at the quarry jetty mean increased noise levels at this site?

The rock drill and shovel will not always be in a deep hole (which is supposed to buffer the noise).

96

"Processing will not occur before 7 A.M.". (p. 3.5-1) Problem: trucks and equipment begin warming up earlier. A noisy process at 6:00 A.M.!

On page 3.5-12, it should say "Mobile equipment should be equipped with backup alarms designed to minimize off-site noise impacts."

The information about drilling equipment and high pit walls does not take into consideration any echoing effects that might occur from -20 to -60 feet MLLW.

Sound level measurements need to be made with all equipment running and loading of bulkhead rock going on!

The following must be part of any noise mitigation plan: "Additional sound level monitoring at measurement location 5 (north of the site) would be conducted where sound levels attributable to quarry activities are highest. If sound levels are found to exceed day or night sound limits, additional measures would be implemented to limit sound levels from the quarry operations." This should be introduced on page 3.5-12.

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• Roads and Transportation.

No new roads or road improvements are proposed for existing off-site roadways. The existing conditions of the access roads, Olympus Boulevard and Quarry Road, are what we have to deal with. Quarry road was not put in until 5 years after Olympus Boulevard was established (to serve the residences along it). This explains why Olympus Boulevard is narrow, with drainage ditches on both sides, etc. It was built in 1930. [See Exhibit #11.] Walking, running, riding a bike are not safe activities as long as those large single and tandem trucks continue to travel down this road. How big was a truck in 1932?! This is especially true on the days that they have 80-90 trucks traveling down these roads. If the County had not put in the little turn out on the opposite side of Oak Bay Road at Olympus Boulevard (which is not even there to accommodate the quarry- it is for Puget Power trucks to pull over to work on their equipment), the trucks could not make a right hand turn. The existing corner requires a very sharp turning radius to make a right-hand turn to go north. If the turnout were not there, the larger tandem trucks would definitely not be able to make a legal right hand turn. They would have to make a left hand turn, go through the development, out to Beaver Valley, and then go north towards Port Hadlock. The problems at this corner were documented in the County Comprehensive Plan.

Should the *No Action Alternative* be chosen, the residents who live along Olympus Boulevard and Quarry Road will finally be able to walk, jog, horseback ride without worrying about getting hit by trucks their mirrors, or flying debris.

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• **Barging (marine transportation).**

According to Glacier (p. 3.9-4), "there is no known marine route conflicts or constraints associated with existing barge activity." What about when there are 427 extra barge loads of reclamation material coming to the site during phase 5? What about the other 1,355 incoming trips? Current conditions: maybe 1-2 barges are loaded per week. Barges are not parked there all the time as they would have one believe. There will have to be extra barge trips in order to stay on their reclamation schedule.

104

• **Groundwater Monitoring Program (Appendix IX)**

This is only effective if Jefferson County "issues a determination of non-significance or a mitigated determination of non-significance." Does this mean the program is cancelled. (p. 1)

105

The monitoring wells will be drilled only to sea level. All other residential wells in the area are below sea level. If they are truly "monitoring wells". Shouldn't they be at least as deep as the wells in the near vicinity? (p. 1)

106

If no water can be found on the site, then what?

107

If an increase in chloride levels ppm does occur, then how will the wells be rehabilitated?

108

Due to the monitoring wells being placed "along the southern portion of the site", it appears that the monitoring plan does not cover residences to the north or west (which are more vulnerable as concurred on by Dr. Leonard Palmer and AES, Inc.)

109

Page 4 forces the Mats Mats Area Coalition (MMAC) to hire (at great expense) a consultant to determine if mining has caused elevated concentrations of chloride or nitrate. We do not have a hydrogeologist on our payroll as does the state and Glacier Northwest. This plan provides drinking water only. What about flushing, showers, gardens, etc.?

110

On page 5, who pays for the third appraiser, if one is needed? This is spelled out.

111

It seems a lot of this plan is at the discretion of Glacier, as laid out in the language covering the two corrective actions. This needs to be worked on. What role will the County play in all of this? The PUD?

112

Provisions should be made so that this corporation cannot go bankrupt/out of business/ change hands or in any other way maneuver out of their responsibility for the consequences of their actions. A performance bond is a must!

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• **Miscellaneous comments.**

Would the one turion of eelgrass become a bed of eelgrass if were not for the action of the engines of the tugboats?

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Is dredging one of the "minor impacts" that they refer to when speaking of the eelgrass?	115
Once the present mountain of overburden is used as reclamation fill, will the residences to the west of the quarry site be able to have a view to the inside of the quarry?	116
Where are the 3 additional acres they wish to mine? (p. 3.7-4?)	117
On page 14 of the newly revised Hydrogeologic Report "it is not expected to impact the <u>quantity</u> of water existing in off-site wells." How about water <u>quality</u> ?	118
Using Figure 4 (Site & Exploration Plan), connect the dots. [See Exhibit #12.] In this case the dots are EB -23, -5, -33 and separately -26, -21, -33. These wells seem to exhibit fresh water flow. If the mine is expanded around EB -21 or -26, will this drain the aquifer for Olympus Boulevard?	119
"The mitigation measure (s) chosen would be dependent on site-specific conditions, such as bedding, fault and/or joint pattern orientation, and <u>would be determined during mining, as necessary.</u> " Question: Who's checking for accuracy? Who's checking to see if they work? Who's checking to see what the problem is? Would the problem be an adverse impact?	120
Are they reclaiming for housing or "forestry land use"? (p. 24 of Appendix I)	121
Page 2 of Appendix VIII states, "Air pollution control water is absorbed into the ground." I thought this was impermeable ground! On page 1 it says, "Storm water collects and there is no percolation." [Please see Exhibit #13 regarding previous 1991 study for the Graving Dock Proposal regarding "percolation".]	122
It states in Appendix IX, the Groundwater Monitoring Program, states, "This program shall be effective as of the date Jefferson County issues a determination of non-significance or mitigated determination of non-significance with regard to the applications and plans submitted to the County on October 22, 1997." Does this mean this program is not valid anymore?	123
Reminder: This is from Dr. Leonard Palmer's letter to the Jefferson County Permit center, March 23, 1998: "The standard drilling program used by AESI is typical of available exploration techniques. 32 boreholes were drilled on 117 acres. That is about one square foot explored, by drilling, for each 160,000 square feet. The drilling has explored about .0006% of the site. If it can leak, we have 1/160,000 of the area where it could leak. The quarry can't miss. The finished quarry will have excavated all material, and will not be able to miss any existing ground water flow conduits. If it can leak, it will leak."	124
The <i>Mats Mats Quarry EIS Scoping</i> letter which outlined the "Elements of the Environment" that were to be analyzed says, "All existing concrete stockpiles would be removed from the site prior to completion of reclamation." This sentence is not in the DEIS. It needs to be re-introduced.	125

Response to Letter 7

MATS MATS AREA COALITION (March 7, 2002)

1. Comment acknowledged.
2. Comment acknowledged.
3. During the proposed phased mining and reclamation, stormwater ponds designed and constructed consistent with NPDES standards and conditions, would be provided to control and treat stormwater prior to commencement of mining in areas containing stormwater facilities. The existing stormwater outfall location, facilities and water quality standards would not change during mining. For example, the cited existing storm water retention pond wall would not be removed until a replacement retention pond, including conveyance to the outfall location, is created.

As discussed in the *Groundwater* section and *Appendix I* of this Final EIS, the Mats Mats Quarry does not provide a direct source of groundwater recharge to the nearby domestic supply wells.
4. Please refer to response to comment 3 of this letter.
5. As described in the EIS, mining and reclamation would cause an increase in the amount of dust generated at the facility; however, the air quality analysis prepared for this EIS simultaneously modeled the dust generated during mining and the dust generated during reclamation. The model predictions were well below all applicable ambient air quality standards. Please refer to Response to Letter 4 (Jefferson County), comment 2 for a discussion on fugitive dust from quarry operations and relationship to Mats Mats Bay.
6. The potential for seawater intrusion during mining and after reclamation is described in the updated *Groundwater* section and *Appendix I* of this Final EIS. Some limited marine seepage is anticipated to occur in areas of the mine below sea level, possibly resulting in a layer of brackish water at the base of the mine. However, this is a potential impact only to the mine operations, and impacts to off-site wells are not anticipated. Refer to the Response to Letter 4 (Jefferson County), comment 42 for additional discussion on salt water intrusion.
7. The backfill placed in the mine area during reclamation would provide a higher amount of storage for freshwater than under the existing conditions. The increased storage of freshwater would result in a hydraulic barrier to seawater intrusion beneath the mine. The anticipated changes to existing groundwater conditions beneath and adjacent to the mine, including the freshwater/saltwater interface beneath the mine under the backfilled condition, are described in the *Groundwater* section and *Appendix I* of this Final EIS.

Runoff on slopes in the mine buffer area to marine waters would take place as it does presently under the existing conditions. Under reclaimed conditions there would likely be some runoff into the reclaimed area from the surrounding slopes. The reclaimed mine would only be backfilled to elevations ranging from 20 to 30 feet above MLLW with

bedrock walls extending to higher elevations surrounding the mined area. The potential for erosion in the bedrock walls is expected to be minimal. Refer to the *Earth* section and *Appendix I* for additional discussion of potential erosion impacts and associated mitigation measures.

8. During mining, storm water runoff would be routed through water quality treatment facilities prior to outfall to Mats Mats Bay. The level of turbidity and sediments in released storm water would be within NPDES criteria and significant erosion impacts to Mats Mats Bay would not be anticipated to occur with continued mining.

Offsite landslide activity was observed along the western side of Mats Mats Bay inlet, located to the west of the quarry. These landslides are not located on the Mats Mats Quarry property. Page 13, paragraph 4 of *Appendix I* Hydrogeologic Evaluation, incorrectly identified the location of the landslides as on the south side of the bay. The slopes along the west side of the inlet are composed of Vashon Drift sediments, which were determined to have been oversteepening from wave action during high tides. In addition, surface water runoff from upslope areas may have been a contributing factor to the landslides. In addition, The Washington State Department of Ecology's Coastal Zone Atlas (DOE, 1978) identifies relative slope stability categories on coastal lands of the state. According to the Atlas, the majority of the site is designated as "Stable Slopes". The shoreline slope areas outside of the mining area are designated as "Intermediate Slopes" (slopes over 15 percent with thin soils over bedrock). The barge loading area is designated as "Modified Slopes" (areas highly modified by human activity).

Based on the vibration analysis (*Appendix XI*) performed for this EIS, mining would not increase the existing offsite landslide risks. Landslide activity is anticipated to continue on these offsite areas if the private property owners do not implement measures, including control of runoff.

9. Blast vibrations are attenuated (i.e., reduced with distance traveled) differently in different materials. Vibrations traveling through rock into fill and back into rock are likely to be reduced from those traveling directly through the rock. Under all blasting activity, each blast would be designed using a scaled distance of 70 to minimize the potential for blasting vibration impacts. Please refer to response to Letter 4 (Jefferson County), comment 63 for additional discussion on vibration from blasting..
10. After reclamation, the reclaimed quarry would become a closed canopy mixed forest dominated by Douglas-fir and red alder but also including western red cedar, western hemlock and big-leaf maple. The wildlife aspects of the reclaimed site would be typical of a second growth forest community.

Initial reclamation planting would include grasses, shrubs and trees. Grasses would be broadcast as hydroseed. Reclamation would utilize native vegetation and, beyond the initial planting period, irrigation would not be required.

11. Comment acknowledged. Each measurement event requires days of planning to ensure that reasonable weather conditions can be expected, the equipment and personnel are available, and the facility will be at or near full operation. Under these constraints,

reasonable effort was made to take sound level measurements at full quarry operation to provide a worst-case estimate. However, it is the nature of the operation that all equipment is rarely operating at the same time. Therefore, several measurements were taken in order to capture full excavation operations as well as quarry rock being loaded onto barges at those locations most affected by each activity – thus providing a measurement with full operation of the quarry. Please note that noise from various equipment and activities affects the surrounding residential communities differently. For example, noise from the loading of the barges would be audible to residences on the eastern edge of the peninsula but are not as noticeable to residences on the western shore of Mats Mats Bay. The noise analysis presented in the EIS represents a conservative worst-case analysis.

12. Comment acknowledged. While it is true that the quarry is currently served by a mix of tandem and single trucks, the operating requirements and turning radii of these vehicles has changed little over time.

The Draft EIS was prepared consistent with standards required in the State Environmental Policy Act (SEPA) which requires traffic (and other potential impacts) be analyzed according to local, adopted standards. The study area was set originally by Jefferson County Planning and Engineering Staff, and later reviewed by the Department of Natural Resources. The traffic study includes an analysis of intersection levels of service, all of which operate at acceptable levels. The study also discusses the current condition of Quarry and Olympus Boulevard, which were originally built to serve the quarry and later served area residences. Research into reported accidents has shown no change in accident rates. The only reported accident occurred near the Fire Station, and did not involve any Glacier Northwest trucks.

Quarry Road and Olympus Boulevard were designed to conduct vehicle traffic. At the time the roads were built, there were little or no area pedestrians. It is acknowledged that the lack of wide shoulders or sidewalks along Quarry Road and Olympus Road limits the pedestrian aspects of the roadways.

13. Comments acknowledged. Based on comments received on the Draft EIS, the Groundwater Monitoring Plan has been revised and updated. The Groundwater Monitoring Plan has been revised to assign oversight of Monitoring Plan implementation to the Washington State Department of Natural Resources (DNR) and Jefferson County. The final scope of the Plan would be approved by the DNR and Jefferson County during the permit review process. A qualified consultant selected by Glacier, and approved by DNR and Jefferson County, would conduct the monitoring and prepare the reports. At Glacier's expense, a qualified consultant jointly selected by DNR and Jefferson County, and approved by Glacier, would review the reports. If contingency planning becomes necessary, that consultant would also, at Glacier's expense, assist these agencies in working with Glacier to develop contingency response actions. Please refer to the *Groundwater* section and *Appendix IX* of this Final EIS for detail on the updated Groundwater Monitoring Program. Please also refer to Response to Letter 4 (Jefferson County), comments 1 and 105
14. Mitigation measures identified in this EIS for potential groundwater impacts include visual monitoring of exposed bedrock surfaces as mining proceeds towards the southern portion of the site. The mine supervisor, the mine engineer, or a professional geologist would complete the ongoing visual monitoring.

Monitoring reporting requirements and identification of criteria for establishing the effectiveness of proposed mitigation measures are included in *Appendix I* and *Appendix IX* of this Final EIS. It is proposed that the DNR and Jefferson County would provide oversight for evaluating the results of ongoing monitoring and the effectiveness of implemented or proposed mitigation measures (see response to comment 13 of this letter). Corrective action measures for any significant adverse impacts to offsite supply wells are discussed in *Appendix IX* of this Final EIS. A contingency response plan is included in the groundwater monitoring plan.

15. As indicated in the *Land Use* section of the Draft and Final EIS, upon completion of mining and reclamation activities, the site could be developed consistent with the RR-5 zoning designation (one dwelling unit per five acres). Under the existing zoning, a maximum of 23 residential units could be developed on the site. The proposed reclamation plan is designed to provide conditions suitable for subsequent residential uses. However, any residential development proposed subsequent to site reclamation would be subject to separate permitting and environmental review. The applicable provisions of the Jefferson County Unified Development Code would control any use of the site subsequent to mining and reclamation.
16. Comment acknowledged.
17. Comment acknowledged. The term “significant” is defined under the State Environmental Policy Act (SEPA) Rules as “a reasonable likelihood of more than a moderate adverse impact on environmental quality” (WAC 197-11-794). An EIS is intended to disclose probable significant adverse impacts. Statements in the Draft EIS stating that “significant impacts are not anticipated” or “not expected” indicate that they are not probable and there is not a reasonable likelihood of more than a moderate adverse impact.
18. Comments acknowledged. The cited statement on page 2-8 of the Draft EIS should have indicated, “as under current operations, the number of blasts would not exceed three per week. The Final EIS has been updated to reflect the maximum of three blasts per week.
19. The GMA definition of “long-term commercial significance” refers to a site’s ability to sustain “long-term commercial production” (RCW 36.70A.030(10)). The significance of the County’s “Mineral Resource Land” designation is explained in Section 3.9 of this Final EIS.
20. Comment acknowledged. Under the *No Action Alternative*, assuming annual sales of approximately 500,000 tons, mining would end in 2005 and site reclamation would be completed by 2007. The Final EIS has been reviewed for consistency in referencing these dates.
21. All clean soil imported from off-site, including from existing Glacier Northwest operations, would be pre-qualified and tested prior to being shipped to the Mats Mats quarry. No soils with arsenic or heavy metal contamination would be imported to the site for reclamation. Refer to Response to Letter 4 (Jefferson County), comment 5.

22. Optimum moisture or less is required for handling and compaction during reclamation. The cited statement is a construction standard for soils of all types.
23. As stated in *Earth* section of this Final EIS, "Fill soils up to 80 feet in depth would be required for the *Proposed Action* to backfill the quarry floor to elevation 20 feet. 3H:1V (horizontal to vertical) fill slopes up to 150 feet high would be constructed along the bedrock sidewalls." The final grading configuration is shown in Figure 2-4 of Chapter 2 of the Final EIS. As shown on this map, the central portion of the quarry would be backfilled to approximate elevation 20 feet, with fill soils along the quarry sidewalls extending up to approximate elevation 110 feet.
24. Clean soil imported to the site for reclamation would not be sold. Please refer to Response to Letter 4 (Jefferson County), comment 5.
25. Jefferson County has issued a formal Code Interpretation stating that the expansion of an existing surface mining operation will be deemed to have 'minimal adverse impacts' if the impacts are not 'significant' as defined in WAC 197-11-730. See Case No. MLA01-000183 (May 15, 2001). With implementation of the various mitigation measures discussed in this EIS, the proposal would not have significant adverse impacts as that term is defined in SEPA. Accordingly, the proposal appears to meet the 'minimal adverse impacts' standard provided in UDC 4.24(7).

UDC 4.24(7) indicates that a conditional use permit is required if an expansion proposal increases off-site impacts, or introduces a new use or operation. The *Proposed Action* does not involve an increase from the current rate of mining, or involve any new use. The proposal would continue historical hard rock mining, processing, reclamation, trucking, and barge transportation activities (including the barge importation of reclamation soil). Jefferson County will determine whether a conditional use permit is necessary, based on the analyses presented in this EIS and other relevant information
26. As indicated in response to comment 25 of this letter, Jefferson County will determine whether a conditional use permit is necessary, based on the analyses presented in this EIS and other relevant information. Please refer to Response of Letter 1 (Department of Ecology, comments 2 and 3) for discussions on the historic importation of clean soil for reclamation.
27. Please refer to Response to Letter 1 (Department of Ecology), comments 2 and 3 for a discussion on historic barge activity at the site. Barge unloading of clean soil for reclamation has historically occurred at the site. Barge unloading of clean soils for use in reclamation occurred under site ownership by General Construction and Glacier Northwest. Approximately 12 acres on the extreme southern end of the site has been reclaimed.
28. Proposed mining phases necessitates relocation of internal roadways. The noise analysis prepared for this EIS considers movement of equipment throughout the quarry.
29. Reclamation fill for phases 4, 5 and 6 would come from stored spoils, including spoils from Phase 3 mining.
30. Refer to response to comment 3 of this letter.

31. Water quality management during mining and reclamation would occur under the NPDES Sand and Gravel General Permit already issued for the mine (Permit WAG-50-1286). The permit during mining is specific to the current discharge locations, and is renewed each five years. There are no differences in stormwater management between the various alternatives, including the *No Action Alternative*. Runoff from the quarry during mining would continue to be directed into the existing sediment ponds located on both the south and west portions of the site (See Figure 1-2 in the Final EIS). Under all mining phases, similar treatment ponds would be used to treat water before discharge. The treated discharge would continue to be directed into the Mats Mats Bay via the north and south outfalls, as under the existing condition. Moving the treatment ponds as necessary for quarry operations would not require a new NPDES permit; the permit requirement is for treatment sufficient to discharge water that is compliant with the conditions it imposes.

Reclamation would commence under the DNR Surface Reclamation Mining Permit when mining operations cease in any given area. Under the final reclaimed condition, stormwater runoff would be directed via swales to a sediment pond located on the eastern side of the quarry adjacent to the existing docks. Water from this pond would be piped to Admiralty Inlet (See Figure 1-3 in the Final EIS).

32. The stormwater runoff at the quarry is currently controlled and treated by the quarry's stormwater system and discharged to Mats Mats Bay. There are no designated infiltration areas on the site. It is not anticipated that designated infiltration areas would be provided at the site after completion of reclamation. However, infiltration would occur throughout the reclaimed areas on the site and freshwater lens conditions would be as described in the *Groundwater* section and *Appendix I*.
33. Comment acknowledged. The proposal is an update of the existing Department of Natural Resources (DNR) Surface Mining Reclamation Permit (#70-010170) for the Mats Mats Quarry Operation. The update to the permit is required to: 1) transfer the permit from Fletcher General (also known as General Construction) to Glacier Northwest; 2) meet the standards of Washington's Surface Mining Act, as amended in 1993; and, 3) reflect the continuation of hard rock mining to an increased depth of 60 feet below mean lower-low water level (MLLW) and related importation of clean soil by barge for reclamation. Any increase in mining depth beyond that currently permitted requires prior approval by the State Department of Natural Resources (DNR). Please refer to Response to Letter 1 (Department of Ecology), comments 1 and 2.
34. There does not need to be "major faults or fold" for drainage to occur in basalt. A description of the Crescent Formation basalt and the occurrence of groundwater in the basalt are included in the *Earth and Groundwater* section of this Final EIS. There has been no observed water discharging from fractures, faults and flow tops exposed in the intact basalt within the quarry area. Although more individual basalt flows might be present beneath covered areas, the presence of additional basalt flows would likely not result in any changes to the conclusions of the Final EIS concerning potential groundwater impacts. Available data indicates the basalt flows between the off-site observation well and the mine are acting as a hydraulic barrier, preventing any "draining" of groundwater from off-site areas to the south into the quarry. The presence of more basalt flows in the southern portion of the site would likely increase the effectiveness of this hydraulic barrier given the physical and hydraulic characteristics of the basalt.

35. As described in the *Groundwater* section and *Appendix I* of this Final EIS, the typical physical characteristics of the flow tops provide for seepage of groundwater relative to the adjacent relatively impermeable basalt layers. Recharge to the basalt aquitard at the site is predominantly from precipitation. The few freshwater seeps observed at the site appear to be temporal and caused by rainfall infiltrating down through the surrounding soils and bedrock. These observed bedrock seeps discharge at very low rates via narrow fractures along the mine walls, and are often noted as a wet streak on the bedrock. Seepage has not been observed in the flow tops exposed within the active mine area.

The *Groundwater* section and *Appendix I* of this Final EIS are consistent in describing observed or possible faults and folds. High angle faults and fractures, likely formed during uplift of the basalt flows, have been mapped in the northern portion of the quarry and are presented on Figure 3.1-4 in the *Earth* section of this Final EIS. No high angle faults or fractures were observed in the central or southern portion of the quarry. The locations and density of the high angle faults and fractures in the basalt and sedimentary breaks are likely intermittent in the Mats Mats area.

36. Comment acknowledged. A 300-foot mining setback has been established in the southern portion of the quarry to extend the hydraulic barrier created by the multiple basalt flows. This setback is one of several mitigation measure identified in this Final EIS for minimizing the risk of potential impacts to groundwater south of the site. Refer to Figure 3.3-2 of the *Earth* section of this Final EIS for the approximate location of the 300-foot mining setback.
37. Please refer to response to comment 34 of this letter.
38. Groundwater flow at the quarry site is west to east based on the orientation of the basalt flows and regional groundwater flow direction. Groundwater flow is likely limited to the individual flow tops. Some groundwater flow could occur in the sedimentary interbeds. However, the sedimentary interbeds observed at the site are comprised of fine-grained sediments with a low hydraulic conductivity. Although the basalt flow tops would be more permeable than the massive columnar-jointed basalt, water has not been observed to discharge from the basalt flow tops in the walls of the quarry.
39. Comment acknowledged. As described in the *Groundwater* section of this Final EIS, groundwater is present in the basalt at the quarry site.
40. Comment acknowledged. Some absorption and filtering would occur at the base of the quarry, but only in the sub-drill zone which extends only a few feet beneath the excavated mine floor. The sub-drill zone is a thin artificial zone of high permeability caused by the blasting/excavation process. The sub-drill zone is underlain by relatively impermeable, undisturbed basalt flows.
41. Retention ponds are used for temporary storage of water collected from the base of the quarry. This water is eventually discharged to Mats Mats Bay. Some of the water stored in the pond would be lost to evaporation, and there is the potential that some of the water would seep back into the underlying bedrock. Given the extremely low hydraulic conductivity for the basalt, the amount of water seeping back into the underlying bedrock is much less than the water lost to evaporation or discharged to Mats Mats Bay.

42. The cited reference in the Draft EIS was intended to indicate that the increased hydraulic gradient would not be permanent, with cessation of mining and reclamation included in the *Proposed Action*. It is acknowledged that conditions that last up to 30 years can be considered a long-term condition to residents in proximity to the site.
43. Glacier Northwest currently employs all of the air quality mitigation measures listed in the Air Quality section of this Final EIS.

There are no plans to mitigate the fugitive dust entrained in the trees for the following reasons. First, the amount of fugitive dust that might become entrained in the trees would be negligible (in part due to the dust control measures practiced at the site). Also, as discussed in the Response to Letter 4 (Jefferson County), comment 22, fugitive dust that is temporarily captured by the trees does not have a significant effect on the short or long-term ambient air concentrations or on the dust deposition rates attributable to the Quarry. Therefore, no impacts are anticipated from fugitive dust entrained in the trees becoming dispersed by the wind, and no mitigation measures would be necessary to control this phenomenon.

44. Comment acknowledged. Please refer to the *Risk of Explosion and Vibration* section of this Final EIS for an updated list of mitigation measures to minimize the potential for fly rock.
45. Comment acknowledged. Please refer to the *Air Quality* section of this Final EIS for an updated list of mitigation measures to minimize the potential for air quality impacts.
46. Please refer to Response to Letter 4 (Jefferson County), comment 41.
47. The cited statement in the Draft EIS *Appendix I* is that no tidal response was observed in the wells monitored with the exception of EB-12, EB-23 and EB-33, indicating tidal monitoring was only observed in these three wells. The measured tidal response in on-site wells (EB-12 and EB-23) and the off-site well (EB-33) does not indicate hydraulic connection between the on-site and off-site wells. Please refer to the *Groundwater* section and *Appendix I* of this Final EIS for additional discussion concerning tidal monitoring and evaluation
48. The freshwater/saltwater interface is oriented north-south beneath the Mats Mats Peninsula. The groundwater conditions encountered in EB-33 are consistent with the regional interpretation of the hydrogeologic conditions in the vicinity of the site.
49. The measured water level rise in EB-33 indicates a very low yield in the rate of groundwater flow to the well. A dry well at EB-33 would not have provided better evidence of the hydraulic barrier formed by the basalt flows. Groundwater was measured at an elevation approximately 40 feet above the lowest point of the existing mine floor, providing additional evidence of the effective hydraulic barrier created by the multiple basalt flow comprising the basalt aquitard. The groundwater levels measured in EB-33 are similar to recorded water levels measured in nearby domestic supply wells as shown in Figure 3.1-2 of the *Earth* section of this Final EIS. Water quality samples (chloride and nitrate) have not been collected from EB-33.

50. Observations at the site indicates precipitation falling on the site does infiltrate the fractured subdrill zone and likely does provide some recharge to the basalt. However, the majority of the precipitation falling on the site ponds as surface water and is conveyed off-site via the stormwater management system. As described in the *Groundwater* section and *Appendix I* of this Final EIS, the reclamation backfill would provide for additional storage of groundwater originating as precipitation.
51. Rainfall on the mine would be treated and discharged to Mats Mats Bay during mining under all alternatives, including the *No Action Alternative*. Because the footprint of the quarry would not differ between the alternatives, just the depth of the mine, the amount of rainfall treated and discharged would not change between the alternatives. Stormwater management is the same under all alternatives, and all alternatives would discharge under authorization of the current NPDES General Permit, which expires on August 6, 2004. The NPDES General Permit program is renewed at least every 5 years.
52. Please refer to response to comments 31 and 51 of this letter.
53. Pumps would be used as necessary where gravity cannot move water around the site. Mine dewatering discharge includes water that seeps into the mine pit or accumulates at the bottom of the mine pit from precipitation. Mine dewatering water is pumped from low points in the northern and eastern portion of the site to a sediment pond for treatment. Water from the sediment pond is conveyed to a rock-lined trench and discharged from the north bank of Mats Mats Bay slip (Station M-1). The stormwater management on the site would be managed the same under each alternative, however each alternative differs in depth and duration of mining.
- Discharge and water treatment during mining and reclamation under all alternatives would be authorized under the NPDES Sand and Gravel General Permit already issued for the mine (Permit WAG-50-1286).
54. The cited pond is shown as remaining at the end of reclamation. Sediment trap pond treatment would be used throughout reclamation.
55. The NPDES Sand and Gravel General Permit issued by the State Department of Ecology for the Mats Mats Quarry requires that stormwater and mine dewatering discharges to surface water be monitored weekly for temperature during warm weather months (July through September). The quarry's two outfalls are generally dry during the summer months, and weekly monitoring ceases when discharge ceases.
56. Comment acknowledged. Please refer to response to comment 8 of this letter.
57. Please refer to response to comment 54 of this letter.
58. Comment acknowledged. Please refer to response to comment 8 of this letter.
59. Nitrate-nitrogen testing is not required at all under the NPDES Sand and Gravel General Permit administered by the Washington State Department of Ecology (Ecology). Under its last review of this 5-year permit cycle, Ecology evaluated data from sand and gravel mines to see if nitrate-nitrogen resulting from explosives residue should be monitored (Ecology 1999). Ecology concluded from these data that nitrate-nitrogen concentrations were not a problem at quarries requiring monitoring, based on 338 samples from

quarries analyzed between January 1, 1997 and January 1, 1999. Consequently, nitrate-nitrogen monitoring is not included in the 5-year permit issued on June 25, 1999 (to cover the period August 6, 1999 through August 6, 2004, when the program will be re-evaluated and renewed). Refer to the *Surface Water* section of this Final EIS for a discussion on nitrate-nitrogen conditions.

- 60. All required permits would be obtained when and if dredging were proposed.
- 61. Comment acknowledged. Please refer to Response to Letter 4 (Jefferson County), comment 2.
- 62. As discussed in Response to Letter 4 (Jefferson County), comment 22, fugitive dust entrained in the trees surrounding the Quarry would not significantly affect the long-term deposition rates associated with the Quarry. The short-term ambient concentrations attributable to the facility could be slightly higher than those predicted by the modeling analysis, but not significantly. The amount of fugitive dust that exits the site would remain constant and negligible whether some, none, or all of it is entrained in the trees surrounding the site. Regardless of when the wind blows it out of the trees, the total quantity of fugitive dust released on an annual basis would be unaffected by the trees. The only effects the trees could have on the fugitive dust generated at the Mats Mats Quarry would be to distort the dispersion timeline and slightly modify the dispersion pattern.

While fugitive dust could be deposited in waters that are carried into Mats Mats Bay via tidal action, a larger amount of water (tidal water plus streams and other runoff emptying into the Bay) would exist the Bay. The exiting water would be expected to carry a portion of the deposited fugitive dust out of the Bay.

- 63. Refer to Response to Letter 4 (Jefferson County), comment 33.
- 64. The Draft EIS reported an analysis that computed a quarry dust deposition rate in grams per square meter per year at various distances from the mine (MFG 2000). If the mine were to operate for 100 years continuously, atmospheric dust deposition would total 1.2 millimeters (less than 5/100ths of an inch), assuming a sediment density of 1.5 tons per cubic yard (MFG 2000). Under the *Proposed Action*, which is the alternative with the longest duration of mining, the mine would operate approximately 16 years. Thus, quarry operations would not be anticipated to have an adverse effect on sediment accumulating in Mats Mats Bay. The dust deposition analysis is repeated in *Appendix XIII* of the Final EIS. Please refer to response to comment 62 of this letter for a discussion on tidal action as it relates to dust.
- 65. Comment acknowledged. Please refer to response to comment 5 of this letter.
- 66. The quarry's primary stormwater facility (S-1) is dredged annually. Pond dredging typically occurs in late summer or fall when stormwater flows are minor.
- 67. Please refer to Response to Letter 4 (Jefferson County), comment 25 for a discussion on the potential for eutrophication impacts to Mats Mats Bay.
- 68. Water discharged from the outfall pipe is required to meet state water quality standards for the protection of fish and fish habitat (refer to the *Surface Water* section of this Final

EIS). The pipe itself would not be anticipated to block fish passage along the shoreline. Outflow would consist of treated storm water runoff from a site not historically containing any natural streams. Thus no attractants would be present that may cause fish to consider the flow part of a natural stream system.

69. The proposal does not propose any forest practices or other disturbance within the shoreline buffer.
70. Please refer to response to comment 68 of this letter for a discussion the outfall pipe, and Response to Letter 4 (Jefferson County), comment 25 for a discussion on Mats Mats Bay water quality.
71. The Washington Department of Fish and Wildlife (WDFW) scoping comment attached to this comment letter, and presumably the source of this comment, indicated that the Draft EIS should address impacts of current and proposed mining activities on nearshore habitats and resources of Admiralty Inlet and Mats Mats Bay. The Draft EIS evaluated impacts from escaping mine materials into the water from wind dispersion, stormwater discharge, and barge loading spills of mine product. Atmospheric deposition of quarry dust is not a significant contributor to sediments in Mats Mats Bay, as explained in the response to comment 64 above. Water discharge has been compliant with permit requirements since Glacier Northwest, Inc. completed improvements to the storm drainage system after its acquisition of the property. Under all alternatives, product would continue to be trucked to the two barge-loading facilities on the east side of the site where it is unloaded directly onto waiting barges. The potential exists for accidental spillage of rock into the water as the material is redistributed on the barge. For the purposes of this EIS, continued periodic dredging near the barge facilities is assumed to be required every five years based on the loading and unloading of a maximum of four 4,000-ton barges per day. However, over the past several years Glacier Northwest has implemented spill prevention measures to limit spillage from barges into the water. With continued implementation of the measures, it is anticipated that dredging would not be required as frequently as in the past. If dredging were to be required, separate environmental review would be performed. Habitat impacts associated with rock spillage and dredging were evaluated in the Draft EIS. Stormwater runoff from the overburden storage would continue to be managed under all alternatives as it has in the past, using the stormwater system described in *Appendix XIII* of the Final EIS.
72. Comment acknowledged. There will likely be additional sites of marine seepage as the quarry elevations move down under the *Proposed Action* (60 feet below MLLW) and *Limited Mining Alternative* (30 feet below MLLW). Please refer to the response to Letter 4 (Jefferson County), comment 43 and the *Groundwater* section of this Final EIS for additional discussion on marine water seepage.
73. Please refer to Response to Letter 4 (Jefferson County), comment 31.
74. As discussed in the *Groundwater* section and *Appendix I* of this Final EIS, the anticipated increase in marine seepage in the quarry is a potential impact primarily to mine operations. Therefore, monitoring of marine seepage in the quarry would be performed by onsite mine personnel. Mitigation measures for minimizing potential adverse impacts to mine operations are included in the *Groundwater* section and *Appendix I* of this Final EIS.

75. The proposed reclamation plan is not specifically designed to “hold back marine water intrusion”. However, the increased storage capacity of the reclamation backfill material would result in an accumulation of fresh groundwater. As discussed in the *Groundwater* section and *Appendix I*, the freshwater/saltwater interface is anticipated to decrease in elevation as freshwater accumulates in the reclamation backfill. Any major changes to the freshwater/saltwater interface would likely occur over a time period that corresponds to several years beyond the duration of mining and subsequent reclamation. The timing of the changes to the freshwater/saltwater interface would be controlled by (1) the timing of active mining, (2) the rate of marine seepage into the active mine area below sea level, (3) the amount of freshwater accumulating in the base of the quarry area, and (4) the timing of backfill placement during mine reclamation. There would be no significant impacts to the basalt aquitard caused by the anticipated changes in the freshwater/saltwater interface, and there are no anticipated adverse impacts to the offsite supply wells.

Refer to Response to Letter 4 (Jefferson County), Comments 18, 42, and 87 for additional discussions on groundwater issues.

76. Please refer to response to comment 66 of this letter.
77. Blast vibrations are attenuated (i.e., reduced with distance traveled) differently in different materials. Vibrations traveling through rock into fill and back into rock are likely to be reduced from those traveling directly through the rock. Under all blasting activity, each blast would be designed using a scaled distance of 70 to minimize the potential for blasting vibration impacts. Please refer to Response to Letter 4 (Jefferson County), comment 63.
78. With the proposed blasting procedures, no significant impacts based on possible vibration transmission characteristics associated with the faulting noted in the comment are anticipated.
79. Comment acknowledged. Please refer to Response to Letter 4 (Jefferson County), comment 63.
80. Comment acknowledged. Blasting monitoring has been conducted in and adjacent to residences at the locations cited revealing very low vibration levels. On site measurements have confirmed that these very low vibration levels are consistent with normal attenuation characteristics of the intervening ground. Thus on-site measurements provide an adequate means of ensuring that off-site vibration levels are below regulatory concern. However, the proponent may, on occasion, opt to supplement the onsite monitoring with off-site monitoring.
81. Block Failures - Highwall stability analysis contained in the February 5, 1999 AESI letter concluded that block failure does not appear likely in the east and north high walls, and bedding planes are not a significant threat to highwall stability. Therefore, the presence of fracture and bedding planes within the highwall rock does not invalidate the use of the term “competent rock”.

Unconsolidated Fill Highwall Fill soils maybe used to backfill mined sections of the pit. However, the fill would not be placed to construct a highwall. The fill would be placed in thin horizontal lifts within the mined area. The fill would extend from cut face to cut face,

and thus, no highwall fill face would be created. Essentially, the fill would be placed within a box in a layered fashion.

82. Placement of rock bolts requires use of air-hammer drilling equipment. Thus, additional levels of noise, dust and vibration would be created temporarily. However, these effects would be localized to the mine area immediately adjacent to the drilling site and it is not anticipated that properties outside the mine area would be impacted by vibration from the drilling equipment.
83. Evaluation of the west wall was not completed for the Final EIS because this portion of the quarry is not exposed to Admiralty Inlet and the risk of highwall failure is less critical. However, due to the conservative approach utilized in the analysis of the east and north highwall faces, that analysis is applicable to the west highwall. Further, the factor of safety for the west highwall is higher than that of the east and north highwall faces due to the lack of hydrostatic pressure from seawater. Refer to response to comment 84 of this letter for additional discussion on highwall stability.
84. Comment acknowledged. The stability analysis prepared for this EIS was completed assuming a nearly horizontal plane of weakness (fault) extends continuously through the basalt headwall, and hydraulic continuity (from Admiralty Inlet) across the plane exists, which would induce large hydrostatic pressure along the fault. This is not the case, but was modeled to simulate a “worst case” condition. In reality, factors of safety against highwall instability are much higher. Therefore, this model would be appropriate for the Mats Mats Bay side of the headwall, and further modeling would not be required.
85. Reclamation planting would include grasses, shrubs and trees. Grasses would be broadcast as hydroseed.
86. Pioneer species would include native trees and shrubs. Although some weeds would be expected, weeds are not the pioneer species described.
87. See response to comment 86 of this letter.
88. After reclamation, the reclaimed quarry would become a closed canopy mixed forest dominated by Douglas-fir and red alder but also including western red cedar, western hemlock and big-leaf maple.
89. It is anticipated that the closed canopy mixed forest would occur within 15 to 20 years of final reclamation. Reclamation would utilize native vegetation and, beyond the initial planting period, irrigation would not be required.
90. It is anticipated that the relocation of equipment associated with the *Proposed Action* would serve to reduce sound levels over those experienced under the existing condition. The equipment would, in general, be moved to more central locations in the quarry, more distant from the water and with higher intervening topographic barriers. It is not anticipated that any major noise producing equipment would be placed near a property boundary in a location not protected by intervening topography, berms, stockpiles, or barriers. This is because it benefits both Glacier Northwest and the surrounding communities to be mindful of potential noise impacts when moving or replacing equipment and to take the necessary steps to minimize noise impacts from this

equipment.

In addition, based on public comment regarding noise from the quarry, this Final EIS identifies an additional noise mitigation measure to conduct additional noise monitoring after the types or locations of major pieces of equipment operating at the Mats Mats quarry are changed to verify that the change in equipment location would not result in an exceedence of noise standards. Refer to the *Noise* section of this Final EIS for detail.

91. Comment acknowledged.

92. New elevations created from reclamation would reduce noise from the Mats Mats operation rather than increase it since the new elevations would result in higher topographic obstructions between much of the onsite equipment and the surrounding communities. Primary crushing activities would be relocated from near Mats Mats Bay to the vicinity of the grizzly, which is toward the center of the site. As discussed in the response to comment 90 of this letter, potential noise impacts will be considered when relocating equipment, and all reasonable efforts will be made to place the equipment in more central locations away from the water and with adequate obstructions from berms or topography between the equipment and surrounding communities.

In addition, the following mitigation measure was identified in the Draft EIS to ensure that sound levels from the 42" Jaw would not increase from sound levels associated with the 36" Jaw: *Prior to full-time operation of the 42" Jaw, sound level measurements will be conducted to verify that the 42" Jaw sound level does not exceed that of the 36" Jaw. If the 42" Jaw sound level at the site boundary exceeds that of the 36" Jaw, measures to reduce the sound level to that of the 36" Jaw will be implemented prior to full-time operation of the 42" Jaw. Measures could include construction of noise absorbing sound barrier attachments; lining and/or reconfiguration of drop points; and, changes in plant operations.*

The comment indicating that the quarry is the most significant noise source in the area and has been since it began operation in 1934 is acknowledged.

93. During daytime hours, defined as 7 a.m. to 10 p.m., the "maximum permissible noise level" can be exceeded by the following amounts during any one hour period:

By 5 dBA for up to 15 minutes, or
By 10 dBA for up to 5 minutes, or
By 15 dBA for up to 1.5 minutes.

For industrial sources affecting residential receivers, the daytime noise limit of 60 dBA could be exceeded for short periods resulting in the following noise limits:

Up to 65 dBA for 15 minutes, or
Up to 70 dBA for 5 minutes, or
Up to 75 dBA for 1.5 minutes, and
Never to exceed 75 dBA.

Measurements of existing noise conditions were based on these noise metrics.

94. Comment acknowledged. Based on public comment regarding noise from the quarry, this Final EIS identifies an additional noise mitigation measure to conduct additional noise monitoring after the types or locations of major pieces of equipment operating at the Mats Mats quarry are changed to verify that the change in equipment location would not result in an exceedence of noise standards. Refer to the *Noise* section of this Final EIS for detail.
95. Please refer to the response to Comment Letter 4 (Jefferson County), comment 56. Generally, active mining and reclamation would not occur concurrently; some of the equipment currently used in the mining operation would need to be diverted to the reclamation activity. Because the overall levels of equipment would not increase, and because this equipment would often be working at a lower elevation in the pit resulting in higher topographic barriers, it is anticipated that future sound levels would be lower than existing.
- Regarding barge loading, the *Proposed Action* does not include additional barge loading facilities. Also, as discussed above, the amount of equipment would remain the same under the *Proposed Action* as currently exists. There would not be sufficient manpower or equipment to simultaneously load two barges, so barge loading noise is not expected to increase over what is currently experienced. Please refer to the *Transportation* section of this Final EIS for additional discussion on the number of barge trips under the proposal. Peak and average noise levels would not increase, regardless of the number of annual barge trips.
96. The rock drill and shovel currently operate at varying elevations throughout the quarry, and would continue to do so in the future. Sound levels from this equipment would vary in the future much like they do today. However, with the *Proposed Action*, the drill and shovel could operate at lower elevations than currently allowed, during which times noise from this activity would likely be lower at off-site locations than currently.
97. Comment acknowledged. The nighttime noise limit prior to 7 a.m. is 10 dBA lower than during daytime hours, resulting in a nighttime noise limit of 50 dBA, plus exceedences. Any on-site activities occurring prior to 7 a.m., including equipment warm-up, must meet this more stringent nighttime noise limit.
98. Comment acknowledged.
99. Any echoing effects that might occur under the *Proposed Action* would be more than offset by the reduction in direct “line-of-sight” noise provided by the much higher topographical noise barriers. Echoing would not be anticipated to result in increased noise levels off-site.
100. Comment acknowledged. Please refer to response to comment 11 of this letter.
101. Comment acknowledged. Please refer to response to comment 90 of this letter.
102. Comments acknowledged. Jefferson County has no standards for the number or size of trucks that may use a given road in this area. Although the County records show the roads in the 1930s, it is understood that the roads were originally constructed to serve the quarry. The roads were dedicated to public jurisdiction at some point after construction (a common practice in private road construction).

Trucks have been using these roads and intersections for over 70 years. While trucks may be longer now when tandems are in use, the operating capabilities of dump trucks is the same or better than in the past (better turning radii, better acceleration and braking systems). While larger trucks may use the turnout on the opposite side of Oak Bay Road, this is not an illegal turn. It is legal to cross a single solid yellow line for certain maneuvers. Many private motor vehicle drivers have been observed making the same movement – crossing the centerline and entering the oncoming traffic lane. With low volumes and good sight distance, these turns do not present a safety issue.

103. Comment acknowledged.
104. Please refer to the *Transportation* section of this Final EIS for a more detailed discussion on the anticipated number of annual and daily barge trips under the *Proposed Action*. Although the maximum number of barges entering and exiting the barge loading area would fluctuate depending on market conditions and reclamation needs, the routes of barges would not change. Because there are no known marine route conflicts, constraints or safety concerns associated with existing barge activity, and the *Proposed Action* would not increase the maximum number of daily barge trips, significant marine transportation impacts are not anticipated.
105. Comment acknowledged. The Groundwater Monitoring Plan has been revised and updated for this Final EIS, with the cited statement removed. Please refer to *Appendix IX* of this Final EIS for the updated plan.
106. The proposed monitoring wells would be completed to depths that correspond to at least 5 feet (about -65 feet MLLW) below the proposed maximum quarry limit of -60 feet MLLW for the *Proposed Action*. Please refer to *Appendix IX* of this Final EIS for the revised groundwater monitoring plan for details concerning proposed well completions.
107. Measurable amounts of groundwater likely would not be encountered during drilling of the additional monitoring wells. As was observed in EB-33 and the on-site wells, the groundwater accumulated very slowly in the wells due to the very low hydraulic conductivity of the basalt. Groundwater is anticipated to accumulate in the proposed monitoring wells at similar rates. If no water accumulates in the proposed wells it would be an additional indication of (1) the variable groundwater conditions in the basalt aquitard, and (2) the presence of an effective hydraulic barrier between the quarry and offsite supply wells.
108. As discussed in the *Groundwater* section and *Appendix I* of this Final EIS, there is minimal risk of seawater intrusion into off-site wells as a result of on-site mining activities because of the lack of hydraulic continuity between the quarry and off-site wells. The groundwater monitoring plan included in *Appendix IX* discusses the sampling, reporting and analysis associated with chloride concentrations detected in the proposed onsite monitoring wells. Contingency measures are described in *Appendix IX* of this Final EIS. The contingency plan will be used to identify and implement appropriate actions to rectify and reduce any potential impacts such as increased chloride concentrations in groundwater between the quarry and off-site wells.
109. The evaluation of the regional hydrogeology framework in the vicinity of the site indicates that potential off-site groundwater impacts are limited to the area immediately south of

the site based on the following: (1) the site is located in an area of groundwater discharge for deeper groundwater flowing in a general west to east direction within the basalt aquitard; (2) the Unconsolidated Aquifer providing the primary source of groundwater supply in off-site areas is not present on the project site; and (3) the surrounding marine waters provide an effective hydraulic barrier to shallow groundwater flow from the north and west. Refer to the *Groundwater* section and *Appendix I* of this Final EIS for additional discussions concerning the conceptual groundwater model for the site vicinity and the evaluation of potential impacts to offsite supply wells.

110. A revised ground water monitoring plan is included as *Appendix IX* of this Final EIS. DNR and Jefferson County would provide technical oversight to Glacier Northwest and their consultants as part of their roles as the permitting agencies for mining and reclamation activities at the site. Refer to Response to Letter 4 (Jefferson County), comment 1.
111. Please refer to response to comment 110 of this letter.
112. Comment acknowledged. The updated Groundwater Monitoring Plan identifies the Department of Natural Resources and Jefferson County as the agencies to oversee the implementation of the Plan.
113. Comment acknowledged. Because of the low potential for impacts to off-site production wells, provision of a performance bond is not deemed warranted.
114. Analysis of the feasibility of the single turion establishing itself and developing into an eelgrass bed in the absence of the *Proposed Action* is speculative beyond the level of detail normally evaluated as part of a *No Action Alternative*.
115. As noted in the Draft EIS under *Dredging of the Barge Facility* (Page 3.4-19), "The potential loss of the one turion of eelgrass found during this survey would not be a significant concern, as it is not part of a healthy eelgrass bed.
116. Comment acknowledged. The western portions of the overburden pile adjacent to the 200 foot shoreline setback would remain in it's current configuration and would continue to provide a visual buffer.
117. The reference to the additional 3 acres to be cleared was an error. No additional area beyond the existing quarry footprint would be cleared for mining operations.
118. Groundwater quality immediately south of the quarry would not be adversely impacted based on regional and site-specific groundwater conditions within the basalt aquitard. Any changes to the water quality beneath the quarry area, such as the accumulation of brackish water in the subdrill zone, would be restricted to the site limits because of the hydraulic barrier formed by the basalt flows south of the proposed mine limits. Please refer to the *Groundwater* section and *Appendix I* of this Final EIS for additional discussion concerning existing groundwater conditions and potential impacts to the offsite supply wells.
119. Please refer to Response to Letter 4 (Jefferson County), comment 41 for discussion on groundwater conditions.

120. Monitoring and reporting responsibilities are discussed in *Appendix IX* of this Final EIS. The Groundwater Monitoring Plan has been revised to assign oversight of Monitoring Plan implementation to the Washington State Department of Natural Resources (DNR) and Jefferson County. The final scope of the Plan would be approved by the DNR and Jefferson County during the permit review process. A qualified consultant selected by Glacier, and approved by DNR and Jefferson County, would conduct the monitoring and prepare the reports. At Glacier's expense, a qualified consultant jointly selected by DNR and Jefferson County, and approved by Glacier, would review the reports. If contingency planning becomes necessary, that consultant would also, at Glacier's expense, assist these agencies in working with Glacier to develop contingency response actions. The day-to-day activities pertaining to oversight of seepage would be performed by the mine superintendent, as seepage would primarily be an impact to mine operations only.
121. As indicated on page 3.7-4 of the Draft EIS, upon completion of mining and reclamation activities, the site could be developed consistent with the RR-5 zoning designation (one dwelling unit per five acres). Under the existing zoning, a maximum of 23 residential units could be developed on the site. Residential development proposed subsequent to site reclamation would be subject to separate permitting and environmental review. The applicable provisions of the RR-5 zoning designation and other applicable provisions of the Jefferson County Unified Development Code would control any use of the site subsequent to mining and reclamation.
122. Please refer to the *Earth* and *Groundwater* sections of this Final EIS for discussions on geologic and groundwater conditions at the site.
123. The Groundwater Monitoring Program included as *Appendix IX* to the Draft EIS has been updated for this Final EIS. Please refer to *Appendix IX* of this Final EIS.
124. Seepage would be expected during excavation of the quarry, although impacts would be limited to quarry dewatering operations. An analysis of potential impacts and mitigation measures associated with seepage of water into the quarry is presented in the *Groundwater* section and *Appendix I* of this Final EIS.
125. Comment acknowledged. A statement indicating that "all concrete stockpiles would be removed from the site prior to completion of reclamation has been added to Chapter 2 of this Final EIS.